

WE CLAIM:

1. An ablation apparatus comprising:
 - a maneuvering mechanism;
 - a conductive element attached to the maneuvering mechanism;
 - a sensor attached to the maneuvering mechanism and operatively adapted to sense vibration during an ablation procedure; and
 - an output device in communication with the sensor and operatively adapted to respond to a signal from the sensor, wherein the signal corresponds to a sensed vibration.
2. The apparatus of claim 1 wherein the sensed vibration comprises the excitation of water molecules.
3. The apparatus of claim 1 wherein the sensed vibration comprises vibration of the conductive element.
4. The apparatus of claim 3 wherein the vibration of the conductive element corresponds to a vibration within the tissue.
5. The apparatus of claim 1 wherein the output device comprises a switch operatively adapted to turn off power to the conductive element when the vibration has reached a given value.
6. The apparatus of claim 1 wherein the output device is adapted to reduce power to the conductive element when the vibration exceeds a predetermined value.

7. The apparatus of claim 1 further comprising:
a power source in communication with the conductive element,
wherein the output device gives a visual signal to a user to control the power
source.

8. The apparatus of claim 1 further comprising:
a power source in communication with the conductive element,
wherein the output device gives an audible signal to a user to control the power
source.

9. The apparatus of claim 1 wherein the sensor is integrated with the
conductive element.

10. The apparatus of claim 1 wherein the sensor comprises a
microphone.

11. The apparatus of claim 1 wherein the sensor comprises a
piezoelectric crystal.

12. The apparatus of claim 1 further comprising:
a fluid supply in communication with the apparatus, wherein the
output device includes a switch operatively adapted to turn off the supply when
the vibration has reached a given value.

13. The apparatus of claim 1 further comprising:
a fluid supply in communication with the apparatus, wherein the
output device gives an indication to the user to control the fluid supply.

14. The apparatus of claim 1 wherein the maneuvering mechanism is a
hemostat-like tool.

15. The apparatus of claim 1 wherein the maneuvering mechanism is a catheter.
16. An apparatus for ablating organic tissue, comprising:
 - a maneuvering mechanism;
 - a conductive element disposed adjacent a face of the maneuvering mechanism;
 - a sensor adjacent the conductive element; and
 - an output device in communication with the conductive element, wherein the sensor is operatively adapted to sense vibration caused by an ablation procedure and send a signal to the output device to reduce power to the conductive element.
17. The apparatus of claim 16 wherein the sensor is a piezoelectric crystal.
18. The apparatus of claim 16 wherein the sensor is a piezoelectric polymer.
19. The apparatus of claim 16 wherein the sensor is a mechanical sensor.
20. The apparatus of claim 16 wherein the sensor is integrated with the conductive element.
21. The apparatus of claim 16 wherein the output device is a switch operatively adapted to turn off a power source when the vibration has reached a given value.

22. The apparatus of claim 16 wherein the output device gives a signal to a user to control a power source operatively connected to the conductive element.

23. The apparatus of claim 16 wherein the maneuvering mechanism is a hemostat-like tool.

24. The apparatus of claim 16 wherein the maneuvering mechanism is a catheter.

25. A method of ablating organic tissue, comprising:
positioning a conductive element adjacent the organic tissue;
supplying power to the conductive element;
sensing with a sensor positioned adjacent the conductive element
the vibration of the organic tissue; and
reducing power to the conductive element when the vibration reaches a given value.

26. The method of claim 25, further comprising:
halting the power when the vibration reaches a given value.

27. The method of claim 25, further comprising:
supplying fluid from a fluid supply to the tissue; and
halting the fluid supply when the vibration reaches a given value.

28. The method of claim 25 further comprising:
sending a signal from the sensor to a switch to reduce the power.

29. The method of claim 25, further comprising:
providing output from an output device when the vibration reaches a given value.

30. The method of claim 29 further comprising:
 - sending a signal from the sensor to the output device; and
 - sending an indicator signal from the output device.
31. The method of claim 25 wherein the sensor is a piezoelectric crystal.
32. The method of claim 25 wherein the sensor is a piezoelectric polymer.
33. The method of claim 25 wherein the sensor is integrated with the conductive element.
34. An ablation system for creating a tissue ablation site, the system comprising:
 - an energy source;
 - an ablation apparatus operatively coupled to the energy source, the ablation apparatus having a tissue contact surface and one or more energy transfer elements positioned along the tissue contact surface; and
 - a sensor device operatively coupled to the energy source and including a sensor adapted to sense a vibration parameter relating to the tissue ablation site, the sensor device comprising means for varying energy supplied by the energy source to the energy transfer elements in response to the sensed vibration parameter.
35. The system of claim 34 wherein the ablation apparatus further has one or more suction openings positioned along the tissue contact surface and a suction conduit for providing suction from a suction source to the one or more suction openings, the suction conduit operatively connected with the one or more suction openings.

36. The system of claim 34 wherein the sensor device further has a tissue contact surface, one or more suction openings positioned along the tissue contact surface and a suction conduit for providing suction from a suction source to the one or more suction openings, the suction conduit operatively connected with the one or more suction openings.

37. The system of claim 34 wherein the ablation apparatus further comprises an irrigation fluid conduit for providing irrigation fluid from an irrigation source to the tissue ablation site.

38. The system of claim 37 wherein the irrigation fluid is an energy-conducting liquid.

39. The system of claim 37 wherein the irrigation fluid comprises one or more diagnostic or therapeutic agents.

40. The system of claim 37 wherein the sensor further comprises a means for varying irrigation fluid supplied to the irrigation conduit in response to the sensed vibration parameter.

41. The system of claim 34 wherein the ablation apparatus further comprises a maneuvering apparatus operatively connected with the tissue contact surface for maneuvering the energy transfer elements.

42. The system of claim 41 wherein the maneuvering apparatus includes at least one pull wire.

43. The system of claim 41 wherein the maneuvering apparatus includes a handle.

44. The system of claim 43 wherein the handle comprises one or more hinges or joints.

45. The system of claim 44 wherein the one or more hinges or joints are actuated remotely.

46. The system of claim 43 wherein the handle is shapeable.

47. The system of claim 34 wherein the sensor device further comprises a maneuvering apparatus operatively connected with the sensor for maneuvering the sensor.

48. The system of claim 47 wherein the maneuvering apparatus includes at least one pull wire.

49. The system of claim 47 wherein the maneuvering apparatus includes a handle.

50. The system of claim 49 wherein the handle comprises one or more hinges or joints.

51. The system of claim 50 wherein the one or more hinges or joints are actuated remotely.

52. The system of claim 49 wherein the handle is shapeable.

53. The system of claim 34 wherein the sensor device further comprises an output device for alerting or informing a practitioner regarding the vibration parameter relating to the tissue ablation site sensed by the sensor device.

54. The system of claim 34 further comprising a generator operatively connected to the energy source.

55. The system of claim 54 wherein the generator includes a control unit or processor.

56. The system of claim 34 wherein the energy source is an RF energy source.

57. The system of claim 34 wherein the energy source is an electrical energy source.

58. The system of claim 34 wherein the energy source is a laser energy source.

59. The system of claim 34 wherein the energy source is a thermal energy source.

60. The system of claim 34 wherein the energy source is a microwave energy source.

61. The system of claim 34 wherein the energy source is an ultrasound energy source.